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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/712,305 | 11/14/2003 | Hiroyuki Kita | 43890-646 | 8872 |

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| EXAMINER | |
|---|---|
| BUDD, MARK OSBORNE | |
| ART UNIT | PAPER NUMBER |
| 2834 | |

DATE MAILED: 03/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H·A

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/712,305 | KITA ET AL. | |
| | Examiner | Art Unit | |
| | Mark Budd | 2834 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12 and 14-25* is/are rejected.

7)☒ Claim(s) *11 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11-14-03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

These claims perport to be "a driving method of piezoelectric actuator ---"but no actual steps are defined in the claims. Thus one cannot discern whether a method or an apparatus is actually being claimed. Claim 2 has additional problems 1 that the last paragraph is confusing and unclear with references to width center values, zero points. Without clarification, one cannot determine the metes and bounds of such claim language. Also, in many claims the term "distorting" is used. Should the term be "distorting?

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 3, 6/3, 7/3, 8/3, 9/3, 12,15/12, 17/12, 18/12, 19/12 and 20/12 are rejected under 35 U.S.C. 102(a) as being anticipated by Brown.

Brown (figs. 3 and 5-10) teaches a piezoelectric actuator using thickness polarized piezoelectric elements driven by both a position control circuit and a bias circuit which is for polarization recovery or to prevent the effects of depolarization. Note that any of #92, #90, #96 or #116 (fig. 3) could fairly be interpreted as a control circuit.

Note too, that intermittent operation (claim 6/3) would be provided by use of a standard on-off switch common to all electrical devices.

Claim 10 is rejected under 35 U.S.C. 102(a) as being anticipated by Kanno et al.

Kanno et al (applicants prior art citation) teaches a piezoelectric device with an asymmetric hysteresis that is naturally polarized. A control voltage was applied to measure the displacement (piezoelectric constant).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-16, and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown.

The teachings of Brown have been described above. Brown does not include a limit circuit or explicitly show the details of use in a head positioning or disc recording device. However, it is common to provide voltage limiters (official notice taken) for piezoelectric drive circuits to both protect circuit elements and protect against depolarization of the piezoelectric element. Thus, for at least these reasons it would have been obvious to one of ordinary skill in the art to provide Brown with voltage limiters. The structures of claims 21-25 are all known in the prior art (note applicants disclosure pages 1-3. Brown teaches providing depolarization and hysteresis compensation via an electrical bias voltage. Thus for this known reason it would have been obvious to one of ordinary skill in the art to provide the prior art with Browns bias

or conversely, to use Browns actuator in any known prior art piezoelectrically actuated devices.

Claims 14/12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of Ooe.

Brown, as previously discussed teaches the piezoelectric actuator, but does not explicitly show a switch to alternate between the polarization restoration and positioning circuit. This increases the flexibility of the device and would save power by allo9wing the restoration voltage to be disconnected. Thus for at least these reasons it would have been obvious to provide switches in Brown to allow either simultaneous or individual application of the two drive circuits.

Claims 11, 13 and their dependents objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1, 4, 4 and their dependents would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Due to it s confusing nature it would be complete speculation to apply prior art to claim 2 at this time.

Further cited of interest are Micheli (asymmetric hysteresis), Kasuga (laminated body), May (fig. 5 #116), Gallmeyer, Yoshihiro, Deck, Shiozawa and Sakamoto (all show hysteresis or deploying protection circuits).

Budd/ds

03/19/05

MARK O. BUDD
PRIMARY EXAMINER
ART UNIT 2834